



UNIVERSITI PUTRA MALAYSIA

**SUITABILITY OF VISUAL RESOURCE ASSESSMENT PROCEDURE
IN DETERMINING PUBLIC PERCEPTION OF MALAYSIAN
LANDSCAPE QUALITY**

MOHD. NAZRI HJ. SAIDON

FPAS 2007 1



**SUITABILITY OF VISUAL RESOURCE
ASSESSMENT PROCEDURE IN
DETERMINING PUBLIC PERCEPTION
OF MALAYSIAN LANDSCAPE QUALITY**

MOHD NAZRI HJ. SAIDON

**MASTER OF SCIENCE
UNIVERSITI PUTRA MALAYSIA**

2007



**SUITABILITY OF VISUAL RESOURCE ASSESSMENT
PROCEDURE IN DETERMINING PUBLIC PERCEPTION
OF MALAYSIAN LANDSCAPE QUALITY**

By

MOHD NAZRI HJ. SAIDON

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
in Fulfilment of the Requirement for the Degree of Master of Science**

October 2007



DEDICATION

Dedicated to my beloved family: parents, Hj. Saidon Che Saad and Hjh Rogayah Mohamed Rasedi, two daughters named Nur Humaira and Nurul Huda. This is also especially, dedicated to my wife, Haslinawati Mohamed Dahim for her unfailing patience and encouragement.

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

**SUITABILITY OF VISUAL RESOURCE ASSESSMENT PROCEDURE IN
DETERMINING PUBLIC PERCEPTION OF MALAYSIAN LANDSCAPE
QUALITY**

By

MOHD NAZRI HJ. SAIDON

October 2007

Chair : Associate Professor Ramdzani Abdullah, PhD

Faculty: Environmental Studies

The issue on who is responsible to determine whether visual landscape quality is good or bad, attractive or unattractive, and so forth is still in much debate. This research was conducted to investigate the preference between expert personnel and public in visual landscape quality. This is due to the problem whether either method being use by expert can represent public preferences. The hypothesis of this study is there is no significant difference in visual landscape quality preferences between the expert and public to the study area. The goal was to determine if the expert method (VRAP) is suitable in representing the public preferences for visual quality of Malaysian landscape. There are two groups of respondents, which are expert and public groups. The expert consists of ten ($n=10$) respondents conducted the field assessment by following strictly the expert method (VRAP) while the public respondents were shown thirty-six tests slide photographs (based on public method). These photographs were systematically taken at the site and the respondents were asked to rate their preferences for each photos. The scale of visual quality preference

was given range from extremely attractive, attractive, little attractive, unattractive to extremely unattractive. The individual score (percentage ranking) of public assessment was then compared to the median (percentage ranking) of expert groups evaluation using non-parametric statistical analysis. At the same time, several statistical tests were also conducted to determine the pattern of expert and public preferences of visual quality assessment. Results indicated that there are significant difference of visual preference ($p\text{-value} = 0.004$) between the expert and public at the study site. This finding suggests that experts and public have difference perception of visual quality preference of Malaysian landscape. Therefore, the expert method (VRAP) is not able to represent public preferences in this study.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

**KESESUAIAN PROSIDUR PENILAIAN SUMBER VISUAL DI DALAM
MENENTUKAN PERSEPSI ORANG RAMAI TERHADAP KUALITI
LANDSKAP MALAYSIA**

Oleh

MOHD NAZRI HJ. SAIDON

Oktober 2007

Pengerusi: Profesor Madya Ramdzani Abdullah, PhD

Fakulti : Pengajian Alam Sekitar

Isu utama dalam kajian penilain landskap visual ialah pihak yang bertanggungjawab untuk menentukan landskap visual baik atau buruk, menarik atau tidak menarik, dan sebagainya masih lagi giat diperbincangkan. Kajian ini dijalankan untuk menyiasat penilaian kualiti landskap visual di antara kumpulan pakar landskap dengan kumpulan orang awam. Ini berdasarkan masalah semasa yang mana kaedah yang digunakan oleh kumpulan pakar boleh mewakili pandangan kumpulan orang ramai. Hepotesis kajian menyatakan bahawa tidak terdapat perbezaan yang signifikan antara kumpulan pakar landskap dengan kumpulan orang ramai dalam penilaian kualiti visual. Matlamat kajian ialah menentukan samada kaedah pakar 'VRAP' yang diguna pakai oleh kumpulan pakar landskap boleh mewakili pilihan orang ramai tentang kualiti visual landskap Malaysia. Terdapat dua kumpulan responden iaitu kumpulan pakar dan tidak pakar dalam bidang landskap. Kumpulan pakar terdiri dari sepuluh orang responden yang melalui persampelan rawak dan telah pergi ke

lapangan untuk menilai kualiti visual berpandukan sepenuhnya teknik VRAP. Manakala kumpulan bukan pakar terdiri daripada 160 responden yang dipilih dari kelompok kumpulan sains menggunakan persampelan “*convenient*”. Mereka ditunjukkan sebanyak 36 slaid dan diminta untuk menyatakan penilaian untuk setiap slaid. Skala penilaian ialah dari sangat menarik, menarik, sedikit menarik, tidak menarik dan sangat tidak menarik. Jumlah markah individu (telah ditukar dalam unit peratus) bagi setiap responden kumpulan bukan pakar kemudian dibandingkan dengan median skor (telah ditukar unit dalam peratus) kumpulan pakar landskap dengan menggunakan analisis tidak berparameter. Beberapa ujian lain dijalankan untuk mendapatkan corak pilihan penilaian visual kedua-dua kumpulan. Keputusan kajian mendapati terdapat perbezaan yang signifikan antara 2 kumpulan yang dibandingkan dalam kajian ini ($p\text{-value}=0.004$). Justeru itu, kumpulan pakar dan tidak pakar mempunyai perbezaan terhadap kualiti visual di Malaysia. Oleh kerana itu, disimpulkan bahawa kaedah pakar (VRAP) tidak boleh mewakili pilihan orang ramai terhadap kualiti visual landskap Malaysia.

ACKNOWLEDGEMENTS

I wish to express my gratitude and sincere thanks to my supervisor Associate Professor Dr. Ramdzani Abdullah, for the persistent guidance, assistance, support and understanding throughout the study period.

Gratitude and thanks are also extended to all members of the graduate committee, Professor Dr. Mustafa Kamal Mohd Shariff and Associate Professor Dr. Habshah Midi for their constructive comments, advice and guidance.

Special thanks are also dedicated to Dr. Roslan, Mr. Jusang Balong, Mr. Noor Azizi and the staff in Department of Environment, Putrajaya for their time expenses and sincere in giving information and cooperation throughout the study period. My thanks are also extended to the University Agriculture Park for giving me the permission to use the study area and providing data and other useful information. Gratitudes are also due to all the staff of the Faculty of Design and Architecture for their contribution in this research.

Finally, I also wish to express special thanks to my family and others for their support and encouragement, especially to my beloved wife for her encouragement, prayer, support and understanding in making this study possible.



I certify that an Examination Committee has met on 9th October 2007 to conduct the final examination of Mohd Nazri bin Saidon on his Master of Science thesis entitled “Suitability of Visual Resource Assessment Procedure in Determining Public Perception of Malaysian Landscape Quality” in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the student be awarded the degree of Master of Science.


Members of the Examination Committee were as follows:

Mohd Bakri Ishak, PhD
Associate Professor
Faculty of Environmental Studies
Universiti Putra Malaysia
(Chairman)

Suhardi Maulan, PhD
Lecturer
Faculty of Design and Architecture
Universiti Putra Malaysia
(Internal Examiner)

Azizi Muda, PhD
Associate Professor
Faculty of Environmental Studies
Universiti Putra Malaysia
(Internal Examiner)

Ismawi Hj. Zen, PhD
Professor
Kulliyyah of Architecture and Environmental Design
Universiti Islam Antarabangsa Malaysia
(External Examiner)


HASANAH MOHD. GHAZALI, PhD
Professor and Deputy Dean
School of Graduate Studies
Universiti Putra Malaysia

Date: 29 January 2008

This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

Ramdzani Abdullah, PhD

Associate Professor
Faculty of Environmental Studies
Universiti Putra Malaysia
(Chairman)

Mustafa Kamal Mohd Shariff, PhD

Professor
Faculty of Design and Architecture
Universiti Putra Malaysia
(Member)

Habshah Midi, PhD

Associate Professor
Faculty of Science
Universiti Putra Malaysia
(Member)



AINI IDERIS, PhD

Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date: 21 Februari 2008

DECLARATION

I declare that the thesis is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously, and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or at any other institution.



MOHD NAZRI HJ. SAIDON

Date: 7/4/2008

TABLE OF CONTENTS

	Page
DEDICATION	ii
ABSTRACT	iii
ABSTRAK	v
ACKNOWLEDGEMENTS	vii
APPROVAL	viii
DECLARATION	x
LIST OF TABLES	xiv
LIST OF FIGURES	xvi
LIST OF APPENDICES	xvii
GLOSSARY OF TERMS	xviii

CHAPTER

1	INTRODUCTION	1
	1.1 Background of the Study	1
	1.2 Problem Statement	3
	1.3 Scope of the Study	4
	1.4 Research Goal and Objectives	6
	1.5 Research Hypotheses	6
	1.6 Definitions of Selected Terminology	7
	1.7 Assumption and Limitation	10
	1.7.1 Assumptions	10
	1.7.2 Limitations	11
2	LITERATURE REVIEW	12
	2.1 Environmental Impact Assessment (EIA)	12
	2.1.1 The EIA Process and Procedure	14
	2.1.2 EIA Practice in Malaysia	15
	2.2 Landscape and Visual Quality Assessment	18
	2.2.1 Landscape Assessment	18
	2.2.2 Visual Quality Assessment	21
	2.3 Methodologies in Assessing Landscape and Visual Quality	24
	2.3.1 Public Methodologies	24
	2.3.1.1 Psychological Model	28
	2.3.1.2 Phenomenological Model	28
	2.3.1.3 Psychophysical Model	29
	2.3.1.4 Scenic Beauty Estimation	29
	2.3.1.5 Conclusion	31
	2.3.2 Expert Methodology	31
	2.3.2.1 Visual Resource Assessment Procedure	32
	2.3.2.2 Visual Resource Management	39

	2.3.2.3	Guideline for Landscape and Visual Impact Assessment	41
	2.3.2.4	Visual Management System	46
	2.3.2.5	Conclusion	55
2.4		Comparison between Expert and Public Method, and Previous study done using Expert and Public Method	53
2.5		Conclusion	54
3		METHODOLOGY	
	3.1	Study Locations	57
	3.2	The Research Design	62
	3.3	Conceptual Framework Strategy	63
	3.4	Pre-Testing	64
	3.4.1	Public Respondents during pre-testing	64
	3.4.2	Expert Respondents during pre-testing	65
	3.5	Data Collection Procedure	65
	3.5.1	Expert Method	66
	3.5.2	Public Preference Method	71
	3.6	Data Analysis Procedure	77
	3.6.1	Data Analysis for Expert Evaluation	77
	3.6.2	Data Analysis for Public Evaluation	79
	3.6.3	Data Analysis Comparison between Expert and Public Assessment	80
	3.7	Data Collection Instruments	82
4		RESULTS	
	4.1	Introduction	83
	4.2	Results of the Expert Assessment	83
	4.2.1	Test of Normality for Expert Assessment	84
	4.2.2	Experts Assessment for Educational Meadow	84
	4.2.3	Experts Score value were changed to percentage ranking value	86
	4.3	Result of the Public Assessment	87
	4.3.1	Respondent Profile and Background	88
	4.3.2	Test of Normality for Public Assessment	91
	4.3.3	The Public score for UPM Educational Meadow	93
	4.3.4	Results of Mann Whitney U test	98
	4.3.5	Results of Kruskal Wallis test	100
	4.3.6	The Public were responded to the highest mean score	101
	4.3.7	The Public were responded to the lowest mean score	107
	4.3.8	The Public score values were changed to percentage ranking unit value	109
	4.4	Results of Comparison between Expert and Public Assessment	113
5		DISCUSSION	
	5.1	Introduction	115
	5.2	Malaysian Landscape Expert preferences for visual quality	

	using the VRAP	115
5.3	The public's preference for visual quality in Malaysian Landscape	118
5.4	Suitability the VRAP in measuring the public preferences	122
5.5	Implications from Research Findings	126
	5.5.1 Social Scientist and Environment- Behavior Researchers	126
	5.5.2 Those in Decision Making Committee/Stakeholders	127
	5.5.3 Professionals	127
6	CONCLUSION	126
	REFERENCES	132
	BIODATA OF STUDENT	185

LIST OF TABLES

Table	Page
2.1	Ten forms used in Visual Resources Assessment Procedure 34
2.2	Matrix for VRM Variety Class 48
2.3	Different models for Visual Quality Assessment 52
3.4.	Six forms used by Expert evaluation during assessment 73
4.2.1	Exploratory test of Normality for Expert Assessment 84
4.2.12	Visual Impact Assessment Value for All Experts 85
4.2.13	Classification of Class Management of Expert Assessment 86
4.2.14	The VIA Value in Percentage Ranking Unit of Expert Assessment 87
4.3.1	Gender Profile 88
4.3.2	Races Profile 88
4.3.3	Educational Profile 89
4.3.4	Occupation Profile 89
4.3.5	Age Profile 90
4.3.6	Respondents Responds to Problem with their Eye 90
4.3.7	Respondents Prefer to do during their free time 91
4.3.8	Exploratory Data statistic for Tests of Normality 92
4.3.10	Public score class for the UPM Educational Meadow Assessment 93
4.3.11	Group of photo were rated by public respondent 94
4.3.12a	The most preferred scenes responded by public 95
4.3.12b	The moderate preferred scenes responded by public 95
4.3.12c	The least preferred scenes responded by public 95
4.3.13	The Mann Whitney U test to compare mean difference in visual quality for gender variable 99

4.3.14	The Mann Whitney U test to compare mean difference in visual quality for occupation variable	100
4.3.15	The Kruskal Wallis test to compare difference in visual preference across three education levels	101
4.3.16	The respondent respect to visual quality of the S16 photo	101
4.3.17	The Mann Whitney U test to determine any difference of quality Visual Preference between the S16 photo and Gender and Occupation.	103
4.3.18	The Kruskal Wallis test to determine any difference of quality preference between the S16 across three educational levels	104
4.3.19	The Chi Square test to find out if there any association between independent variables and the S16 photo	104
4.3.20	Results of respondents respect to S16 photo assessment	106
4.3.21	Respondents respect to visual attractiveness of the S23 photo	107
4.3.22	The Mann Whitney U test to determine any difference of quality Visual Preference between the S23 photo and Gender and Occupation.	109
4.3.23	The public score value were changed to percentage ranking unit	110
4.4.1	The Wilcoxon Signed test between Expert and Public Assessment	114

LIST OF FIGURES

Figure	Page
2.1 The Steps in the EIA Procedure	14
2.2 Outline of EIA Procedure in Malaysia	17
2.3 Method to assess Landscape Impact proposed by Brigg and France, and Kane	21
2.4 Step Determining Landscape's Visual Quality	22
2.5 Steps for Scenic Beauty Estimation Method	30
2.6 The Relationship between MSC and VIA in VRAP	34
2.7 Steps for Guidelines Landscape and VIA	42
2.8 The Classification of Sensitivity and Impact Magnitude	44
2.9 Steps for Visual Management System	47
3.1 Key Plan	59
3.2 Location Plan	60
3.3 Image Satellite of Study Area	61
3.4 Study Conceptual Framework	63
3.5 Map shows the viewpoint location for expert assessment	69
3.6 Four sciences clusters	72
3.7 Map shows the viewpoint location for public assessment	74
3.8 Schematic of photographic Sampling Procedure from Selected Location along the Road Corridor	75
4.3.1 The Scenes from the 30 photo's Slide Test Set.	96
4.3.2 The Histogram show public preferences of the visual attractiveness for the S16 photo	102
4.3.3 The Histogram show public preference of the visual attractiveness for the S23 photo	108

LIST OF APPENDICES

Appendices		Page
A	The Forms use in Visual Resource Assessment Procedure	137
B	General Instruction for the Public Assessment	146
C	Questionnaire form	147
D	The Slide Surrogate Photograph for the Public Assessment	151
E	Transfer Sheet	157
F	The Codebook for the Public Assessment	161
G	Management Class for Expert and Public Assessment	164
H	The Public Preferences score test	167
I	Table for Expert’s Score	171
J	Selected Statistical Test	174
K	Proposed Landscape Master Plan for Educational Meadow UPM	184

GLOSSARY OF TERMS

A	Attractive
BLM	Bureau of Land Management
BSL	Below Sea Level
DOE	Department of Environment
EA	Extremely Attractive
EIA	Environmental Impact Assessment
EXCO	State Executive Council
EUA	Extremely Unattractive
GLAVIA	Guidelines for Landscape and Visual Impact Assessment
HOEIAG	Handbook of EIA Guidelines
KLIA	Kuala Lumpur International Airport
LA	Little Attractive
LIA	Landscape Impact Assessment
MCS	Management Classification System
NCPC	The National Planning Committee
PhD	Philosophy of Doctorate
SBE	Scenic Beauty Estimation
SMS	Scenery Management System
SPSS	Statistical Package for Social Science
TLIIEA	The Landscape Institute and the Ins. of Environmental Assessment
TLIHEMA	The Landscape Institute and the Ins. of Environmental Management and Assessment.
UA	Unattractive

UPM	Universiti Putra Malaysia
USA	United State of America
USACE	US Army Corps of Engineers
UK	United Kingdom
VAC	Visual Absorption Capability
VIA	Visual Impact Assessment
VMS	Visual Management System
VRAP	Visual Resource Assessment Procedure
VRM	Visual Resource Management

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

A series of major floods in the late sixties and Stockholm Conference on the Human Environment in 1972 has created awareness on environmental impact resulting from development. As a result of the above events and other situations which were related to environmental problems, Environmental Quality Act 1974, that require development more than 50 acres to carried out Environmental Impact Assessment (EIA) was gazetted on the 5th of November 1987. Generally, the EIA has been introduced as a tool to prevent environmental problems caused by development project as well as a tool for making decisions regarding new development project.

“Visual quality is very important for the quality of life” (Lange, 1994, p.101) and lately, the public begin to be aware about the importance of keeping good environment as well as conserving and protecting visual resources. However, issues regarding distortion for visual quality can happen anywhere, for example a study done by Lai and Tao (2003, p.672) revealed that from the top 25 type’s hazards in Hong Kong, the visual pollution and traffic noise issue are perceived to be the greatest threat to the local environment than the global environment, and the hazard are possible contributor to the decrease quality of life. Slovic (1987, p.281) asserted that “if the hazard’s score is higher, the hazard may contribute to the higher

perceived risk to the human”. Those situations informed that people are concern about distortion of the view.

The Star dated 11th of June 2005 reported that a community in Damansara complained to the Petaling Jaya Municipal Council local authority regarding the blockage of a good view because a huge advertisement signage have been placed at a junction between Taman Tun Dr Ismail and Damansara Utama. Furthermore, the signage distracting the motorists view, thus causing hazard to them. This shows the way people feel about a certain view as the problem manage to create an attention from the public (Berita Harian, dated 27th April 2005).

In the early 2005, Malaysians were shocked by news in the mass and electronic media on the proposed residential and commercial development in Seksyen U10 in Shah Alam. The news reported that there will be potential interventions to the natural environment at the area that will diminish visual quality. As a result, people questioned and queried about the *Laporan Cadangan Pemajuan Alam Sekitar* for that particular project. It is assumed that the developers took advantage due to the weakness of guidelines, the loophole of the EIA, or lack of management practice by the Shah Alam City Council (The Sun, dated 07th March 2005).

Based on the literature reviewed, EIA’s guidelines in Malaysia do not addressed elaborately the landscape and visual assessments issues and methods in comparison to other environmental entities such as water, noise, soil pollution etc. This is perhaps due to lack of awareness among administrator on the important of visual quality to the quality of life. Furthermore, EIA do not have any clause mentioning

the “protection, conservation and management of visual resources” in Malaysia legislation (Mustafa, 1999, p.9).

Thus, it is concluded that the EIA’s report in Malaysia require less visual assessment study in determining the approval of particular project development. One possible reason could be there is no systematic way in visual assessment methods to assess visual quality in Malaysia. Thus, what is the best method to assess visual quality in Malaysia?

Many methods are used in assessing visual quality all over the world. It is carry out by the public or expert method. However, they were largely carried out by experts and practice in the United States and European States since 1960’s. In some countries, the visual aspect of the environment is well protected. For example, in the United States, the United State Supreme Court stated, it is the right of every citizens of the states to enjoy navigable streams including the enjoyment of scenic beauty (The Macaulay Institute, 2004).

1.2 Problem Statement

There is a main issue regarding expert and public respondents in visual assessment. Who is responsible to determine whether the visual landscape quality is good or bad, attractive or unattractive, and so forth? This issue is quite obvious which has been debated in many researchers. It was related to both parties, whether the assessment of scenic quality should rely on the public or design experts. At one stage, expert’s evaluation is leading the public in assessing and evaluating visual quality.

This shows that, expert's assessment has dominated landscape visual assessment study than the public's assessment. However, there was no serious attempt to determine whether expert's assessment in visual quality could produce results representing public preferences in Malaysia, whereas many research (e.g: Kaplan, 1988) show that the public have different preference than expert.

It is argued that each individual has different perception about visual quality, but it might come to similar results, if assessment involving the expert and public are put together in a research. This problem is significant because at the end, it is the public who will use, maintained and support the lands resources. In fact, the current research has shown that, scenery enhances peoples' lives; there is an improvement through public participation in notifying their preference about visual quality.

In this study, the researcher investigates the visual quality preferences between the expert and the public. The research problem is whether the methods that is currently being used by the expert can represent public preferences. If these questions could be answered, studies about visual landscape quality in Malaysia can be more systematic and promising, and thus making EIA's report much more informative and proactive.

1.3 Scope of the Study

There are two different studies being carried out. It involves the expert and public, and they are assessed using different visual quality assessing method. The public group was assessed using public preference method, while the expert groups were